

Dominion Nuclear Connecticut, Inc.  
Millstone Power Station  
Rope Ferry Road, Waterford, CT 06385



U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555


JUL 14 2008  
Serial No. 08-0350  
MPS Lic/TGC R0  
Docket No. 50-336  
License No. DPR-65

**DOMINION NUCLEAR CONNECTICUT, INC.**  
**MILLSTONE POWER STATION UNIT 2**  
**LICENSEE EVENT REPORT 2008-004-00,**  
**REACTOR TRIP DUE TO A LOSS OF NORMAL POWER EVENT**

This letter forwards Licensee Event Report (LER) 2008-004-00 which documents a condition identified at Millstone Power Station Unit 2 on May 24, 2008. This LER is being submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in manual or automatic actuation of systems listed in 10 CFR 50.73(a)(2)(iv)(B).

If you have any questions or require additional information, please contact Mr. William D. Bartron at (860) 444-4301.

Sincerely,

  
J. Alan Price  
Site Vice President - Millstone

IE22  
NRR

Attachments: 1

Commitments made in this letter: None.

cc: U.S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 19406-1415

Ms. C. J. Sanders  
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NRC Senior Resident Inspector  
Millstone Power Station

**Attachment 1**

**LICENSEE EVENT REPORT 2008-004-00,**  
**REACTOR TRIP DUE TO A LOSS OF NORMAL POWER EVENT**

**Millstone Power Station Unit 2**  
**Dominion Nuclear Connecticut, Inc. (DNC)**

<b>NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION</b> (9-2007)				<b>APPROVED BY OMB NO. 3150-0104</b>				<b>EXPIRES 08/31/2010</b>																			
<b>LICENSEE EVENT REPORT (LER)</b> (See reverse for required number of digits/characters for each block)												Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.															
<b>1. FACILITY NAME</b> Millstone Power Station - Unit 2						<b>2. DOCKET NUMBER</b> 05000336						<b>3. PAGE</b> 1 OF 3															
<b>4. TITLE</b> Reactor Trip Due to a Loss of Normal Power Event																											
<b>5. EVENT DATE</b>						<b>6. LER NUMBER</b>						<b>7. REPORT DATE</b>						<b>8. OTHER FACILITIES INVOLVED</b>									
MO		DAY		YEAR		YEAR		SEQUENTIAL NUMBER		REV NO.		MO		DAY		YEAR		FACILITY NAME				DOCKET NUMBER					
05		24		2008		2008		-004		-00		07		14		2008		FACILITY NAME				DOCKET NUMBER					
05		24		2008		2008		-004		-00		07		14		2008		FACILITY NAME				DOCKET NUMBER					
05		24		2008		2008		-004		-00		07		14		2008		FACILITY NAME				DOCKET NUMBER					
<b>9. OPERATING MODE</b>						<b>10. POWER LEVEL</b>						<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>															
2						0.01						<input type="checkbox"/> 20.2201(b)				<input type="checkbox"/> 20.2203(a)(3)(ii)				<input type="checkbox"/> 50.73(a)(2)(ii)(B)				<input type="checkbox"/> 50.73(a)(2)(ix)(A)			
2						0.01						<input type="checkbox"/> 20.2201(d)				<input type="checkbox"/> 20.2203(a)(4)				<input type="checkbox"/> 50.73(a)(2)(iii)				<input type="checkbox"/> 50.73(a)(2)(x)			
2						0.01						<input type="checkbox"/> 20.2203(a)(1)				<input checked="" type="checkbox"/> 50.36(c)(1)(i)(A)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)				<input type="checkbox"/> 73.71(a)(4)			
2						0.01						<input type="checkbox"/> 20.2203(a)(2)(i)				<input type="checkbox"/> 50.36(c)(1)(ii)(A)				<input type="checkbox"/> 50.73(a)(2)(v)(A)				<input type="checkbox"/> 73.71(a)(5)			
2						0.01						<input type="checkbox"/> 20.2203(a)(2)(ii)				<input type="checkbox"/> 50.36(c)(2)				<input type="checkbox"/> 50.73(a)(2)(v)(B)				<input type="checkbox"/> OTHER			
2						0.01						<input type="checkbox"/> 20.2203(a)(2)(iii)				<input type="checkbox"/> 50.46(a)(3)(ii)				<input type="checkbox"/> 50.73(a)(2)(v)(C)				Specify in Abstract below or in NRC Form 366A			
2						0.01						<input type="checkbox"/> 20.2203(a)(2)(iv)				<input type="checkbox"/> 50.73(a)(2)(i)(A)				<input type="checkbox"/> 50.73(a)(2)(v)(D)							
2						0.01						<input type="checkbox"/> 20.2203(a)(2)(v)				<input type="checkbox"/> 50.73(a)(2)(i)(B)				<input type="checkbox"/> 50.73(a)(2)(vii)							
2						0.01						<input type="checkbox"/> 20.2203(a)(2)(vi)				<input type="checkbox"/> 50.73(a)(2)(i)(C)				<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
2						0.01						<input type="checkbox"/> 20.2203(a)(3)(i)				<input type="checkbox"/> 50.73(a)(2)(ii)(A)				<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
<b>12. LICENSEE CONTACT FOR THIS LER</b>																											
<b>NAME</b> William D. Bartron, Supervisor Nuclear Station Licensing												<b>TELEPHONE NUMBER (Include Area Code)</b> 860-440-4301															
<b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>																											
CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO EPIX		CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO EPIX									
<b>14. SUPPLEMENTAL REPORT EXPECTED</b>												<b>15. EXPECTED SUBMISSION DATE</b>															
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).												<input checked="" type="checkbox"/> NO															
<b>16. ABSTRACT</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)																											
<p>On May 24, 2008 at 09:38 while at less than 0.01% power in Mode 2, the Millstone Power Station Unit 2 (MPS2) reactor automatically tripped due to a loss of normal power (LNP) event. At the time of the LNP, reactor startup was in progress, the reactor was critical and power was below the point of adding heat. Plant electrical power was supplied from the reserve station service transformer (RSST). The LNP was caused when the low-side supply breakers from the RSST to the 4160 volt and 6900 volt buses unexpectedly opened. Opening the low-side supply breakers to the buses removed power from the reactor coolant pumps (RCP) and control element drive mechanism motor-generator (CEDM MG) sets. As a result, automatic reactor trip signals were initiated on low reactor coolant flow and low RCP speed. Loss of power to the CEDM MG sets resulted in control rods inserting into the reactor core. The emergency diesel generators started and loaded as expected. The Engineered Safety Feature Actuation System responded as expected for a LNP event.</p> <p>The most probable cause for the reserve station service low-side supply breakers opening is a spurious signal that was not sufficiently filtered by the primary audio tone circuitry due to degradation of the tone generation/filtering circuitry. As corrective action, the primary audio tone circuit has been disabled. A modification is being developed to improve the reliability of the audio tone circuit. Longer term corrective actions are being addressed in accordance with the Millstone Corrective Action Program.</p> <p>This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in manual or automatic actuation of systems listed in 10 50.73(a)(2)(iv)(B).</p>																											

## LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

1. Event Description

On May 24, 2008 at 09:38 while at less than 0.01% power in Mode 2, the Millstone Power Station Unit 2 (MPS2) reactor automatically tripped due to a loss of normal power (LNP) event. At the time of the LNP, reactor startup was in progress, the reactor was critical and power was below the point of adding heat. Plant electrical power was supplied from the reserve station service transformer (RSST) [EA, XFMR]. The LNP was caused when the low-side supply breakers [BKR] from the RSST to the 4160 volt (4.16KV) and 6900 volt (6.9KV) buses unexpectedly opened. Opening the supply breakers to the buses removed power from the reactor coolant pumps (RCP) [P] and control element drive mechanism motor-generator (CEDM MG) sets. As a result, automatic reactor trip signals were initiated on low reactor coolant flow and low RCP speed. Loss of power to the CEDM MG sets resulted in control rods inserting into the reactor core. The emergency diesel generators started and loaded as expected. The Engineered Safety Feature Actuation System responded as expected for a loss of power event.

This reactor trip meets the Performance Indicator criteria for "Reactor Trip with Complications" since after completing standard post trip recovery actions, operators entered into the emergency operating procedure for "Loss of Offsite Power/Forced Circulation".

The operators' response to the event was affected by the repeated cycling of the 120 volt AC non-vital instrument panel (VR11) between the normal and alternate power supplies. This system provides AC power to controllers and instrumentation for non-safety related components. While the system is not vital to the safe shutdown of the unit, it affects plant operation. The repeated cycling led to spurious alarms, repeated starts of the non-running charging pumps, letdown isolation and erroneous indication of main steam safety valves opening.

Power to the instrument air compressors was lost due to the LNP. A cross-tie to Millstone Power Station Unit 3 (MPS3) instrument air was established within 16 minutes. Air system pressure remained within acceptable ranges. Also, there was an increase in containment sump level due to leakage from the RCP vapor seals. The RCP vapor seal leakage was re-directed to the volume control tank at 10:40. Both trains of containment radiation monitors were rendered inoperable by the loss of power. The "A" train containment radiation monitor was restored at 11:25.

Offsite power was restored to the "C" 4.16KV vital AC bus at 10:35 on May 24, 2008. Offsite power was restored to the "D" 4.16KV vital AC bus at 12:30 on May 25, 2008. Core heat removal via natural circulation was established and maintained throughout the event until approximately 11:30 on May 25, 2008 when the "B" and "D" reactor coolant pumps were restarted.

This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in manual or automatic actuation of systems listed in 10 CFR 50.73(a)(2)(iv)(B).

2. Cause

The most probable cause for the reserve station service low-side supply breakers opening is a spurious signal that was not sufficiently filtered by the primary audio tone circuitry due to degradation of the tone generation/filtering circuitry. The RSST protective circuitry design is that an audio tone trip actuation from a single channel results in a signal to open the reserve station service low-side supply breakers. This spurious signal resulted in a primary audio tone trip actuation, which caused the low-side supply breakers to open.

The purpose of the RSST audio tone circuitry is to isolate power to the RSST should a fault be detected in the transmission lines to or from the RSST. If an electrical fault is detected on the high side (345KV) of the RSST, a signal is sent to an audio tone transmitter in the switchyard, which sends a signal to an audio tone receiver in the main control room (MCR). The receiver then sends a signal to the breakers on the low side (6.9KV and 4.16KV) of the RSST to trip open. Similarly, if an electrical fault is detected on the low side of the RSST, a signal is sent to

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**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

an audio tone transmitter in the MCR, which sends a signal to an audio tone receiver in the switchyard. The receiver then sends a signal to the breakers on the high side of the RSST to trip open.

**3. Assessment of Safety Consequences**

This event is considered to be of low safety significance. The loss of normal power to the 6.9 KV buses caused a coast down of the reactor coolant pumps. As expected, a reactor trip signal was generated on low reactor coolant pump speed and low reactor coolant system flow. Since the reactor was operating at less than 0.01% power prior to the trip, there was no approach to the specified acceptable fuel design limits, including DNBR (Departure from Nucleate Boiling Ratio). Both emergency diesel generators started and loaded as expected. Offsite power was restored to the "C" 4.16KV vital AC bus at 10:35 on May 24, 2008. Offsite power was restored to the "D" 4.16KV vital AC bus at 12:30 on May 25, 2008. Charging and letdown were utilized to maintain RCS inventory control and auxiliary spray was utilized to control RCS pressure. Core heat removal via natural circulation was established and maintained throughout the event until approximately 11:30 on May 25, 2008 when the "B" and "D" reactor coolant pumps were restarted. RCS heat removal was maintained using auxiliary feed water and the atmospheric dump valves. Containment heat removal was maintained by the containment air recirculation cooling units. There was no challenge to any of the fission product barriers. Based on the above, there was no adverse effect on the health and safety of the public.

**4. Corrective Action**

Since the most probable cause was a spurious signal within the primary audio tone circuitry, the primary audio tone circuit has been disabled. A modification is being developed to improve the reliability of the audio tone circuit. Note: The backup audio tone circuit is in service to isolate power to the RSST should a fault be detected in the transmission lines to or from the RSST.

Longer term corrective actions are being addressed in accordance with the Millstone Corrective Action Program.

**5. Previous Occurrences**

No previous similar events or conditions were identified.

Energy Industry Identification System (EIIIS) codes are identified in the text as [XX].